

**Table 3** Regression results using a full seasonal specification (including an extended sample period)

Variable	Total revenues (\$million)			Average revenue per machine (\$/machine)		
	Estimate	SE*	p Value	Estimate	SE*	p Value
$P_{law}$	-6.487	1.663	<0.001	-1567.29	348.92	<0.001
Time	0.638	0.117	<0.001	85.36	22.28	<0.001
Time <sup>2</sup>	-0.003	0.001	<0.001	-0.166	0.149	0.269
Machines	0.002	0.001	0.049	-2.728	0.284	<0.001
Income (\$trillion)	-11.581	18.263	0.528	9493.88	3535.54	0.009
Constant	30.618	26.563	0.252	1506.59	5143.92	0.770
Winter	-2.549	0.947	0.008	-614.83	242.35	0.013
Spring	2.326	0.829	0.006	892.90	235.64	<0.001
Summer	3.110	0.864	<0.001	908.06	228.97	<0.001
AR(1)	-0.333	0.058	<0.001	-0.304	0.064	<0.001
n	107			107		
R <sup>2</sup>	0.818			0.743		

\*Newey-West HAC standard errors.

total revenues ( $R^2 = 0.846$ ) and -1583 ( $p < 0.001$ ) for average revenue per machine ( $R^2 = 0.777$ ).

Point estimates of the  $P_{law}$  coefficient suggest losses of approximately \$6.5 million per month (in inflation adjusted 2004 dollars). This figure represents a revenue loss of nearly 13% compared to the year preceding the smoking ban.

The stated purpose of Mandel *et al*<sup>1</sup> was to refute the contention of the gaming industry that smoking bans pose a threat to their business: "These results reject the argument that smoke-free laws hurt revenues from gaming". I find, however, that the smoke-free law in Delaware *did* affect revenue from gaming. This finding is statistically significant and quite robust. The public health benefits of smoke-free laws should be weighed against these (and other, similar) economic costs.

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**Authors' response to M R Pakko**

Pakko<sup>1</sup> takes issue with our paper "Smoke-free law did not affect revenue from gaming in Delaware,"<sup>2,3</sup> arguing that our methods

were not sufficient because we failed to control for serial correlation and used a method of controlling for heteroskedasticity that did not meet his approval. We found these concerns odd, since in his original analysis claiming that there were negative effects of the Delaware law (published on the internet as a working paper<sup>4</sup>) he did not correct for either serial correlation or heteroskedasticity. Indeed, correcting Pakko's original model for heteroskedasticity led to the conclusion that the Delaware smoke-free law was *not* associated with a significant change in revenues.

Now, Pakko has produced yet another, more complex statistical model, which he uses to repeat his argument that the Delaware law had an adverse economic impact. Pakko does not present any statistical evidence that his new model is correctly specified, nor has he retracted his earlier model.

Pakko also ignores the explanation given by the Delaware racinos in official filings with the US Securities and Exchange Commission, which did not even suggest that the smoke-free law had any effect on its revenues. As we noted in our paper,<sup>2</sup> the 7%

decrease in revenue for its three casinos in Atlantic City and the management fees from Dover Downs was mainly due to inclement weather.<sup>5</sup> The online summary of the filing<sup>5</sup> did not mention the smoking restrictions as a reason revenue was down from the first quarter of the previous year.<sup>2</sup> In any event, as we showed in our paper,<sup>2,3</sup> this reduction was not significantly significant—that is, it is within the usual random fluctuation in the revenue stream.

Finally, Pakko does not address the current reaction of the racinos to the smoke-free law. The racinos are not looking for ways to circumvent the law, as would be expected if the revenues were in fact suffering as badly as he suggests. Instead, Dover Downs is featuring their smoke-free environment in its advertising (fig 1). If the smoke-free environment were a drain on revenues, it seems odd that Dover Downs would advertise it.

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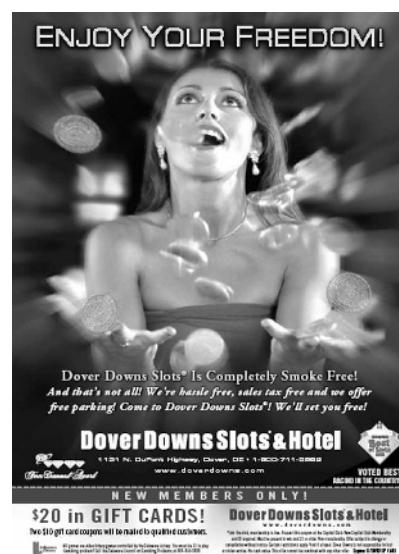
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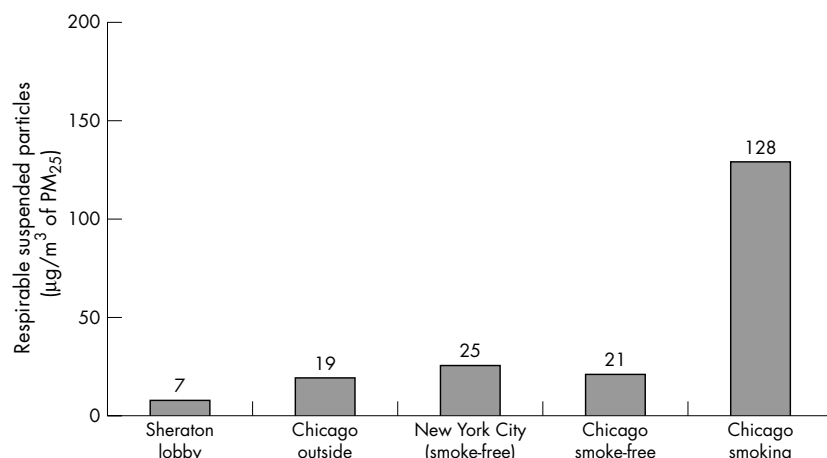
**Health meetings do not belong in smoky cities**

Each year thousands of tobacco control workers meet at the US National Conference on Tobacco or Health. Eleven years ago, in Boston, the opening plenary of the first meeting was held in the Roxy Hotel. Participants at the session complained of the stench of stale tobacco smoke which lingered in the air from an event on the previous evening.

The most recent meeting, held in May 2005, took place in Chicago, where smoking is still allowed in the lobbies of convention hotels and adjacent bars and clubs. The same complaints heard years ago about Boston were expressed by this year's attendees. A group of delegates conducted research on the air quality of Chicago bars and restaurants in an effort to urge conference organisers and city leaders to adopt a smoke-free policy. Fifty people were trained in a conference session on conducting indoor air quality studies.

The training session taught participants to learn how to measure indoor air pollution levels in smoke contaminated and smoke-free settings using a TSI SidePak AM510

**Figure 1** Advert highlighting a racino's smoke-free environment.



**Figure 1** Average concentrations of indoor air pollutants at locations in Chicago and New York.

Personal Aerosol Monitor (TSI, Inc, St Paul, Minnesota) to assess respirable suspended particles (RSPs). Cigarettes are major sources of small RSPs (less than 2.5 µm in diameter (PM<sub>2.5</sub>)). A review by the US Environmental Protection Agency indicates that PM<sub>2.5</sub> exposure in excess of 65 µg/m<sup>3</sup> in any given day is harmful to health.<sup>1</sup>

Five air monitoring teams made measurements in 37 venues in and around the Chicago convention area on Wednesday (4 May) and Thursday (5 May) nights, between 6 pm and 12 midnight, for an average of 44 minutes in each venue. Research teams visited venues for at least 30 minutes with an aerosol monitor placed in a shoulder bag with a small tube protruding to sample the air. Additionally, three observations were made every 15 minutes in each establishment to assess the number of people present, the number of burning cigarettes, and the volume of the room using a Zircon DM S50 Sonic Measure. Average PM<sub>2.5</sub> concentrations (128 µg/m<sup>3</sup>) in smoking establishments were six times higher than concentrations (21 µg/m<sup>3</sup>) in smoke-free establishments (fig 1). These data confirm the obvious—that Chicago area hospitality workers were being exposed to unsafe levels of indoor air pollution while working.

The organisers of the National Conference on Tobacco or Health have finally made the commitment not to hold another one of their meetings in a city that allows indoor smoking in public places. The next World Conference on Tobacco or Health has selected Washington DC for its 2006 meeting. When the venue was chosen in 2003 the host organisers, the American Cancer Society, believed that the nation's capital would be smoke-free, but as the date approaches, it remains to be seen if DC officials will enact a smoke-free air law in time for the conference. It is time for all health organisations to join together to use their collective financial clout to promote smoke-free cities when they plan their convention sites. Annual meetings of organisations such as the American Medical Association, American Cancer Society, and the American Public Health Association (APHA) bring valuable income to host cities. The 2004 International Association of Convention & Visitor Bureaus estimates direct spending to local economies per event to include US\$945 per delegate, \$6753 per exhibiting company, and \$454 673 per event

organiser.<sup>2</sup> Using these estimates, for example, APHA's 2004 meeting attended by 14 000 professionals contributed over \$13 million to Washington DC's local economy in delegate spending alone. When planning annual meetings, there are ample large cities that are smoke-free to choose from (for example, Boston, New York, San Francisco, Los Angeles, Honolulu, Providence, San Diego) with others soon to follow. The same is true globally with the number of world class smoke-free cities (for example, Dublin, Rome, Oslo, Auckland). It is time for all health organisations to put their money where their mouth is and make secondhand smoke history.

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## Seasonal variations in stage of change among Quitline clients

Telephone counselling is an effective smoking cessation intervention and over the past decade smoking cessation quitlines have rapidly proliferated across North America, Europe, Asia, and elsewhere.<sup>1-8</sup> Despite the increase in quitlines, the published data are limited and tend to focus on call volume,

demographic breakdown of callers, and/or overall abstinence rates.<sup>1-6</sup> Numerous factors, including but not limited to dependence, self efficacy, and stage of change, are predictive of quit attempts and abstinence. Recent research suggests that cigarette smoking behaviours have a strong seasonal component,<sup>9-11</sup> with higher consumption and initiation in summer months and lower consumption and higher cessation in winter months. Possible reasons include—but are not limited to—the effect of weather, New Year resolutions, vacations, and tax increases.<sup>9-10</sup>

A better understanding of seasonality and smoking may be important for those planning, promoting, and evaluating smoking cessation services. We explored whether seasonality was related to stage of change among smokers who called NJQuitline, a state sponsored service in New Jersey, USA. Between 2002 and 2004, 4346 individuals desiring counselling called NJQuitline. During the initial assessment, callers' "stage of change" was classified as follows: contemplation (planning to quit within six months), preparation (planning to quit next month), action (quit for less than six months), and maintenance (quit for six months or more). Upon enrolment, 1% reported they were in maintenance, 16% had recently quit smoking and were in the action stage, 71% were in preparation, and 13% were contemplative. It is common for a relatively high proportion of new users of telephone quitlines, as well as internet smoking cessation, to have already quit when they seek support.<sup>1-12</sup> Indeed, in the present study, 16% of enrollees were in the action stage and had quit before calling. However, the proportion of those in the action stage varied over the year (fig 1). A fairly consistent pattern emerges across all three years; a higher proportion of enrollees reported being in the action stage in January, July, August, and December (18.9%, 17.2%, 20.0%, and 19.3% overall compared with 14.6% during the rest of the year). The findings indicate that among those who sought support from NJQuitline, stage of change was impacted by seasonal factors. These possible seasonal factors deserve discussion. The high proportion of clients in the action stage in January and December (winter months in the USA) is likely attributable to New Years resolutions and clean indoor air restrictions.<sup>9</sup> The increases in July and August are likely explained by cigarette excise tax increases—New Jersey raised its cigarette excise tax in July for each of the years presented. Lastly, as shown in fig 1, there were other months with a higher proportion of clients in the action stage, some of these months (November 2002, March 2002, March 2003) correspond with paid state sponsored media campaigns<sup>4-7</sup> which are tagged with the NJQuitline phone number.

Quitline administrators are familiar with the large increases in call volume that occur following media advertising, and according to the season. This study suggests that there are also important seasonal effects on caller stage of change and smoking status. These seasonal differences should be borne in mind when planning, promoting, and evaluating telephone quitlines.

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